REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested. Claims 1-10 are pending in the application.

The specification has been amended as suggested by the Examiner; hence, it is believed the specification is in proper form.

The objection to the drawings is respectfully traversed to the extent that the recital of "S(n)", "S(n+1)", "S(n+2)" and "S(n+3)" are not reference characters as referred to in 37 CFR §1.84, but rather a mathematical description of the autocorrelated values 220. In order to minimize issues, however, the specification as amended should eliminate the objection to the drawings, since the specification as amended describes the autocorrelated values 220 (already illustrated in Fig. 3 as S1, S2, S3, and S4) are examples of the values "S(n)", "S(n+1)", "S(n+2)" and "S(n+3)". Hence, the objection to the drawings should be withdrawn.

Claims 1 and 6 as amended clarify the manner in which the generation of autocorrelated signal values is performed. Specifically claims 1 and 6 specify that autocorrelated signal values are generated based on "successively autocorrelating consecutive samples from consecutive OFDM symbols". As described in the specification as originally filed at page 6, line 29 to page 7, line 3:

> The correlator 200 is configured for generating a new autocorrelated signal value (i.e., correlation output) 220 for each preamble sample received. For example, assume the correlation output S(n) 220 is calculated based on samples 0-15 of the short preamble symbol "t1" 18 and samples 0-15 of the short preamble "t2" 18. In this case, ***the next correlation output*** *S(n+1) 220 is generated by moving the 32-sample correlation window of the correlator 200* ***one sample forward***, thereby using samples 1-15 of the short preamble symbol "t1" 18, samples 0-15 of the short preamble symbol "t2" 18, and sample 0 of the short preamble symbol "t3" 18. Since the short preamble symbols 18 are repetitive, the sample 0 of symbol "t3" is essentially the same as sample 0 of symbol "t1" (aside from noise variations); hence, the correlation outputs S(n+1), S(n+2), S(n+3), etc. should have the same power as S(n).

Hence, the recital of "successively autocorrelating consecutive samples" is supported by the originally-filed description that the "next" correlation output S(n+1) is generated by moving

the correlation window "one sample forward". Hence, the claims as amended satisfy the requirements under 35 USC §112, first paragraph, such that no new matter has been entered.

Further, claims 1 and 6 as amended specify autocorrelating a second adjacent number of adjacent samples, the second number twice the first prescribed number (of samples in each of the short preamble symbols), which read on claims 2 and 7 as originally filed, as well as the description at page 6, line 33 of a 32-sample correlation window (relative to the 16-sample symbol described at page 2, lines 1-2). Hence, the claims as amended satisfy the requirements under 35 USC §112, first paragraph, such that no new matter has been entered.

Claims 1-10 stand rejected under 35 USC §102(b) in view of U.S. Patent Publication No. 2002/0065047 by Moose. The foregoing amendments render this rejection moot.

Further, Moose neither discloses nor suggests ***successively*** autocorrelating ***consecutive*** samples, as claimed, based on autocorrelating a second number of adjacent samples twice the number of samples in each ***short preamble symbol***.

Rather, Moose explicitly teaches performing autocorrelation based on <u>delaying</u> the signal by an N sample point delay via delay 403, where **the value "N" is illustrated as an N sample point delay of 64 sample points (para. 29, therefore N=64).** Fig. 4 is described as illustrating the detection and frequency/timing recovery process based on "[computing] the correlation between the incoming signal samples [Fig. 4D] and the same samples with a *delay of N sample points* [Fig. 4C]." (Para. 54, lines 2-4). The integration window of the correlator 401 <u>consists of two intervals</u>, illustrated in Fig. 4B as "n to "n-95" and "n-160 to n-255" (see, e.g., para. 29, 54), where the integration window is <u>not</u> twice the number of samples in the short preamble symbol, but rather nearly <u>six times</u> the number of samples in the short preamble symbol (i.e., 95 samples wide).

Hence, Moose does not disclose or suggest ***successively*** autocorrelating ***consecutive*** samples, as claimed, based on autocorrelating a second number of adjacent samples twice the number of samples in each ***short preamble symbol***.

Further, Moose does not disclose or suggest the claimed generating a ***median autocorrelation value*** from at least a prescribed minimum number of ***the autocorrelated signal***

values having been generated from the ***initial minimum number of short preamble symbols***. Rather, Moose illustrates that the autocorrelated signal values (411 of Fig. 4) are aggregated by the integrator 405 (see para. 28: "[t]he correlation output 411 is aggregated by integrator 405."). Aggregating autocorrelated values is not a disclosure of the claimed generating a *median* autocorrelation value.

Moose also does not disclose or suggest the claimed detecting a symbol boundary, ***identifying an end of the short preamble symbols***, as claimed. Rather, Moose sets a threshold "halfway between the local maxima and the global maximum" in order to provide detection of an ***incoming packet*** and an initial estimate for symbol timing, where the sample point number f the global maximum (e.g., sample point 319) provides the initial estimate for symbol timing (para. 58). As illustrated in Fig. 4a, however, the sample point 319/320 generating the global maximum corresponds to the start of the OFDM data symbol (see, e.g., 29, lines 10-13, para. 55), not the end of the short preamble symbols, as claimed.[1]

For these and other reasons, the §102 rejection in view of Moose should be withdrawn.

The rejection under §102 in view of Wang is moot in view of the foregoing amendments. Further, Wang does not disclose or suggest the claimed ***successively*** autocorrelating ***consecutive*** samples from consecutive OFDM symbols, where ***each*** autocorrelated signal value is generated based on autocorrelating the second number of adjacent samples (twice the first prescribed number of samples in the short preamble symbols). Rather, Wang generates only two autocorrelation timing metrics $M_1(\theta)$, $M_2(\theta)$ using an autocorrelation window of the number of samples within a single symbol ($m=0$ to N_s-1, where $N_s=16$) (page 2, col. 2, Sec. III); further, the

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[1] See also para. 27, lines 4-8 ("a digital cross-correlator 401, as shown in Fig. 4A, detects an incoming packet on input 407. The correlator is designed to utilize the ***maximum available coherent energy in the preamble for detection*** and to generate a sharp peak for an initial symbol-timing estimate."); para. 29, lines 10-13 ("When the last sample value of the long sync symbols at sample point 320, or the last point of the preamble sequence, enters the correlator's direct path, the correlation reaches a peak value."); para. 31, lines 1-6 ("The expected value of the magnitude of the correlator output is shown in FIG. 5. The correlator has a processing gain of 192 (22.8 dB), the greatest that can be achieved under the WLAN standard. A peak detector can recognize the peak, and the peak's location provides an initial estimate of symbol timing."):

autocorrelation timing metric $M_1(\theta)$ uses a delay of one short symbol, whereas the autocorrelation timing metric $M_2(\theta)$ uses a delay of two short symbols. Hence, Wang does not disclose or suggest that ***each*** autocorrelated signal value is generated based on autocorrelating the second number of ***adjacent*** samples (twice the first prescribed number of samples in the short preamble symbols).

Further, Wang describes on page 3, line 1, that the peak to detect the start of the 9th short symbol (not the claimed *end* of the short preamble symbols) is determined from searching for the peak of the difference $|M_1(\theta)| - |M_2(\theta)|$. Hence, there is no disclosure or suggestion of the claimed generating a ***median*** autocorrelation value, let alone detecting a symbol boundary, identifying an ***end of the short preamble symbols***, based on detecting the autocorrelated signal values having passed ***below*** a threshold that is based on the median autocorrelation value.

The rejection under §102 in view of Golanbari is moot in view of the foregoing amendments. Further, Golanbari does not disclose or suggest the claimed ***successively*** autocorrelating ***consecutive*** samples from consecutive OFDM symbols, where ***each*** autocorrelated signal value is generated based on autocorrelating the second number of adjacent samples (twice the first prescribed number of samples in the short preamble symbols). Rather, Golanbari describes at col. 6, lines 15 et seq. that:

> the most recent sample is correlated with samples that are ***64, 128, 192, and 256 samples in the past***. This type of correlation is known as self-correlation, where the samples are correlated with other samples from the same sequence that were sampled earlier in time. Each correlation of the most recent sample with the four earlier samples results in a correlation value, which is then averaged (block 512).

Hence, Golanbari does not disclose or suggest that each autocorrelated signal value is based on autocorrelating a second number of ***adjacent samples***, as claimed.

Further, Golanbari does not disclose or suggest generating a ***median*** autocorrelation value from at least a prescribed minimum number of the autocorrelated signal values having been generated from the initial minimum number of short preamble symbols; to the contrary, Golanbari describes performing an ***averaging*** of previous average correlations, where in addition

to the first average ("Ave Corr.) in step 512 of Fig. 5 (col. 6, lines 15-27), the receiver in step 515 "**averages** a number of previous average correlation (ave corr) values to produce a threshold value, TH", disclosed as preferably 128 samples that were averaged (col. 6, lines 26-33).

Further, the specification specifically distinguishes between generating a ***median*** autocorrelation value instead of the "average" of the autocorrelated signal values (page 7, lines 21-28).

Hence, Golanbari neither discloses nor suggests generating a ***median*** autocorrelation value, as claimed.

For these and other reasons, the §102 rejection in view of Golanbari should be withdrawn.

As apparent from the foregoing, neither Moose, Wang, nor Golanbari disclose or suggest the claimed feature of generating a ***median*** autocorrelation value from at least a prescribed minimum number of the autocorrelated signal values having been generated from the initial minimum number of short preamble symbols, where each autocorrelated signal value is generated based on autocorrelating a number of *adjacent samples* that is twice the number of samples in each of the short preamble symbols.

In view of the above, it is believed this application is in condition for allowance, and such a Notice is respectfully solicited.

To the extent necessary, Applicant petitions for an extension of time under 37 C.F.R. 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including any missing or insufficient fees under 37 C.F.R. 1.17(a), to Deposit Account No. 50-0687, under Order No. 95-539, and please credit any excess fees to such deposit account.

Respectfully submitted,

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